"The Harder You Work for Something, The Greater You'll Feel When You Achieve It"

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I/We* hereby declare that I/We* have checked this thesis/project* and in my/our* opinion, this thesis/project* is adequate in terms of scope and quality for the award of the Bachelor Degree of Civil Engineering

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I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

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Date : 19 JUNE 2017

COMPARATIVE STUDY THE MOST EFFECTIVENESS WAY TO REDUCE EXCESS CONCRETE BETWEEN RECYCLE, REUSE AND REDUCE IN CONSTRUCTION SITE

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Thesis submitted in fulfillment of the requirements

for the award of the

Bachelor Degree in Civil Engineering

Faculty of Civil Engineering and Earth Resources

UNIVERSITI MALAYSIA PAHANG

JUNE 2017

ACKNOWLEDGEMENTS

In the name of Allah S.W.T, The Almighty, Most Gracious and Most Merciful

This thesis is successfully completed due to the contributions of many people. I hereby would like to express my gratitude to my supervisor, Mr. Zahrizan Bin Zakaria who had guiding me in writing this thesis. His scholarly guidance, commitments, ideas, supports, giving generous advice, constructive comments and critical revision of the drafts made it possible for me to complete this thesis.

I really appreciate the cooperation from the respondents for this study. I would like to say thank you to all my friends and colleagues for their support and always together with me through thick and thin.

Finally, I must express my sincere thanks to my beloved mother (Mrs. Wan Fazlina Binti Wan Yusoff), my lovely father (Mr. Mohd Zuki Bin Abdullah) and my handsome brothers (Nazrul Fazwan Bin Mohd Zuki, Muhammad Nazmi Faiq Bin Mohd Zuki) for their valuable love throughout the years.

Nurul Fathihah Binti Mohd Zuki

ABSTRAK

Pembinaan merupakan sektor utama ekonomi negara yang berhadapan dengan masalah berkaitan sisa bahan binaan. Masalah ini timbul akibat sikap para kontraktor yang berpendapat sisa bahan binaan masih mempunyai nilai selagi mana mereka dapat menjual bahan buangan tersebut kepada peraih tanpa mempedulikan nilainya pada peringkat akhir kerja pembinaan. Beberapa maklumat daripada pengkaji sebelum ini boleh diakses oleh pengurus projek pembinaan bagi mengelakkan berlakunya penghasilan sisa buangan semasa proses pembinaan. Kini, terdapat banyak sisa buangan di tapat pembinaan yang tidak diuruskan dengan baik. Sisa bahan binaan meliputi bahan yang tidak diperlukan atau tidak digunakan. Kesan lambakan sisa bahan binaan terhadap manusia dan alam sekitar sangat membimbangkan. Kontraktor atau jurutera tapak pembinaan masih tidak mempunyai pengetahuan yang mendalam berkenaan kaedah yang bersesuaian untuk mengurangkan lebihan konkrit di tapak pembinaan. Sisa bahan binaan di tapak pembinaan boleh memberi kesan kepada alam sekitar dan mengakibatkan pencemaran. Tambahan pula, pengurusan ekonomi pemaju turut menjadi tidak efektif dek kerana jumlah sisa bahan binaan yang terlalu banyak untuk diuruskan. Hal ini boleh menyebabkan kelemahan dalam strategi pemasaran industri lantas menjurus kepada kegawatan ekonomi negara. Tujuan kajian ini dijalankan adalah untuk membandingkan kaedah paling efektif bagi mengurangkan lebihan sisa konkrit di tapak pembinaan sama ada kaedah kitar semula, guna semula atau pengurangan bilangan bahan binaan. Kesemua data dan maklumat diperoleh melalui lawatan tapak pembinaan, kaji selidik dan temu bual. Indeks Kepentingan Relatif (RII) digunakan untuk menganalisis data yang dikumpulkan daripada kaji selidik terhadap kontraktor Gred 7 di tapak pembinaan. Hasil kajian mendapati kaedah kitar semula merupakan kaedah paling efektif untuk mengurangkan lebihan konkrit di tapak pembinaan berbanding kaedah guna semula dan pengurangan bilangan bahan binaan. Kesimpulannya, kaedah kitar semula didapati paling sesuai dilaksanakan bagi mengurangkan lebihan konkrit di tapak pembinaan.

ABSTRACT

Construction is a main sector of the national economy that faces liable problems regarding wastes in the building materials. Part of the problem stems from the long-held awareness among contractors that waste is not considered worthless as long as the contractor can sell it to waste dealers for any cost at the end of the work. A few data from the previous researchers are available within the reach of project managers to avoid the causes of waste generated during construction processes. Interviews, site visits and literature reviews that are related to the construction industry will revealed a few documented database from previous researchers are available. Nowadays, there are many waste materials in construction site that are not manage properly. Waste materials are unwanted or unusable materials. The effects of waste materials in construction site towards human being and environment are detrimental. Contractor or site engineer are still lack of knowledge about which method are appropriate to reduce excess concrete in construction site. Waste materials in construction site can affect our environment and produce pollution. Furthermore, economic of developer become non effective since there are many waste that need to be manage. So, the marketing strategy in industry also become unproductive. This also can enhance the economics of our country drop drastically. Aims of this study is to compare the most effectiveness to reduce excess concrete between recycle, reuse and reduce in construction site. All the data and information are collected by industrial visit, questionnaire survey and interview. Relative Importance Indices (RII) will be utilized to analyze the data gather from questionnaires survey that had been distributed towards contractor grade 7 in construction site. From the result and data analysis, recycle is the most effective way to reduce excess concrete between recycle, reuse and reduce in construction site. As a conclusion, recycle is the most effective way to reduce excess concrete between recycle, reuse and reduce in construction site.

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RII	Relative Importance Indices

LIST OF ABBREVIATIONS

CIDB	Construction Development Board Malaysia

CHAPTER 1

INTRODUCTION

1.1 Introduction

Materials management is the planning, directing, controlling and coordinating those activities which are concerned with materials and inventory requirements, from the point of their inception to their introduction into the manufacturing process. Materials Management is a basic function of the business that adds value directly to the product itself. It is also embraces all activities concerned with materials except those directly concerned with designing or manufacturing the product and deals with controlling and regulating the flow of material in relation to changes in variables like demand, prices, availability, quality and delivery schedules (Smriti Chand, 2016). Thus, material management is an important function of an organisation covering various aspects of input process because it deals with raw materials, procurement of machines and other equipment's necessary for the production process and spare parts for the maintenance of the plant.

It is also concerned with market exploration for the items to be purchased to have up to date information, stores and stock control, inspection of the material received in the enterprise, transportation and material handling operations related to materials and many other functions. Capability to coordinate and integrate purchasing, shipping and material control from suppliers is required for material cost control. Selection of personnel for marketing, purchasing, inventory control, stores management and materials handling and their training and placement is also to be seen by the materials management department. This indicates that it is very essential to have a materials management department in any organization to support the management in the production activities. It also helps in the marketing, sales promotion and control of all the types of materials for its quantity, quality and cost.

1.2 Background of study

Reduction of the cost of construction is a constant goal for the building industry. One way of reducing the construction cost of buildings is to develop building technologies that will give increased productivity. Reduced construction time at the building-site and waste of materials and resources contribute to further reduction of the costs. Costs can be reduced by optimising the management of waste which are arises. The decisions of consumers in demanding goods and services which lead to waste impact not only on the environment, but also on the level of government spending required by local authorities to collect and manage household waste (Hanif Pourghazin, September 2008). The management of waste has its own economic implications such as productivity, government expenditure and environment (Waste Economics Team, Environment and Growth Economics Defra, June 2011).

For an example, the UK Environment Agency and other government bodies are putting increasing pressure on construction companies to decrease the pollution and imitate to environmental regulations. The pollution fines have been low from the past and due to slack of environmental regulations, it could have been supposed as cheaper to pollute than to prevent pollution (Jennifer Gray, November 2016). Environment is one of the precious thing that we need to care from any harm or pollution. Our environment also can be affected by waste materials in construction site. It is not only harm environment but human being also can be affected. The impacts of the pollution can cause impacts on human being's health. Air pollution and water pollution are the example of pollution that might be happen when we are not handle and manage the waste materials in construction site properly. If not we who can care and protect our precious one, then who?

1.3 Problem Statement

The lack of knowledge of the project manager to reduce excess concrete in construction. Thus, this study is to identify the most effectiveness way to reduce excess concrete between recycle, reuse and reduce in construction site. When the excess of concrete did not manage properly, the pollution towards surrounding will be occur.

The effects of excess concrete in construction site towards human being and environment are detrimental. For a moment, there are many methods to reduce excess concrete in construction site but still the problem about excess concrete in construction site cannot

be solve. In other meaning, project manager still lack of knowledge or education about the effect of waste materials in construction site towards human being and environment and how to practice the methods to reduce excess concrete efficiently.

Excess concrete in construction site can affect our environment and produce pollution such as crisis of air pollution due to excess concrete is expose to the surrounding and water pollution due to excess concrete is expose towards water. Furthermore, economic of developer become non effective since there are many excess concrete that need to be manage. When the economics of developer become non effective, the marketing strategy in industry also become unproductive. This also can enhance the economics of our country drop drastically.

1.4 Objectives

There are three objectives that need to be focused on this research. They are:

1. To study current method to reduce excess concrete in construction site
2. To identify the factor of Reduce, Recycle and Reuse to reduce excess concrete in construction site
3. To analyse the most effectiveness way to reduce excess concrete between Reduce, Recycle and Reuse in construction site

1.5 Scope of study

The scope of study is on the waste management at construction site in Kuantan which are through industrial visit, interview and questionnaire survey to the contactor and project manager at construction site.

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